

E-leadership in Effective Higher Education Management

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Abstract. Effective leadership and management influence the institution's progress, especially in higher education. However, e-leadership and effective university management have not been fully maximized in higher education. This study aims to determine the general overview of e-leadership, effective university management, and e-leadership design ineffective university management at the UPI Sumedang Campus. This study uses a quantitative approach by using a survey method aimed at 204 UPI Sumedang Campus students. The study results show that the general picture of UPI Sumedang Campus leaders has a high e-leadership attitude by meeting the e-leadership indicators, which include visionary, convener, team sponsor, manager, innovator, and mentor to the maximum. Higher education management has been implemented effectively by meeting the indicators of the implementation of strong educational leadership by university leaders. The design of e-leadership ineffective university management has been implemented effectively, and UPI Sumedang Campus's leadership has a high e-leadership attitude. This research is expected to contribute to higher education by allowing leaders to make more specific and strategic decisions in improving the implementation of the education system, which, in turn, will impact improving the overall quality of higher education.

Keywords: Higher Education Leadership; E-Leadership; Effective Higher Education Management; Management Effectiveness; Implementation of Educational Leadership.

1. Introduction

As a system, universities have core components in the form of inputs, processes, and outputs (IPOs) that are interrelated and influencing; effective universities focus on achieving goals through systemic analysis or IPO approaches (Chen et al., 2022; Al Kadri et al., 2023). Higher education is an institution that has a vital role in producing a highly educated and quality generation (Sahrin et al., 2022). The quality of higher education can be seen from how effective e-leadership and management are implemented because these two aspects greatly affect the institution's overall performance (Nanang et al., 2023; Tomchuk et al., 2020). However, there are often problems where the implementation of e-leadership and effective management has not been maximized, causing various challenges in managing and improving education quality (Aziz et al., 2021; Tanjung et al., 2022). So, in this case, leadership and management need to receive special attention to manage the performance of a higher education institution (Agisisti, 2017). Implementing good e-leadership and effective management can potentially improve the quality of education, as both can create a more innovative and responsive learning environment in changing times (Karim et al., 2024; Raharjo, 2023). Therefore, improving the quality of higher education is highly dependent on the ability of institutions to optimize e-leadership and effective management.

E-Leadership, which includes the use of technology in leading and managing higher education institutions, has a crucial role in improving the quality of education. By effectively implementing technology in leadership and management processes, education leaders can improve the efficiency, accessibility, and responsiveness of institutions to the needs of students and society. Leadership determines the running of the organization's management system; with leadership, every program can be planned, implemented, evaluated, controlled, and improved (Halik et

al., 2024).

Effective management in the context of higher education includes a deep understanding of the challenges and opportunities faced by educational institutions, as well as the ability to integrate technology into educational strategies and institutional policies. By optimizing the use of technology, Higher Education leaders and managers can deliver a more dynamic, inclusive, and adaptive learning environment, which in turn will improve the student learning experience and overall academic outcomes. Therefore, improving the quality of higher education through the effectiveness of higher education and its development into an effective institution is an important prerequisite in the context of a higher education quality assurance system to ensure the fulfillment of consistent and sustainable educational standards (Arifudin, 2019). Thus, investment in developing e-leadership skills and effective Higher Education management is essential to achieve quality and relevant educational goals in this digital age.

1.1. Problem Statement

The problems discussed in this study are related to implementing e-leadership and management effectiveness in higher education. E-leadership can involve one-to-one and one-to-many interactions within and across large or wide-ranging units and organizations (Komariah, 2021). The implementation of e-leadership in higher education is related to technological infrastructure, increasing workload and monitoring in a virtual environment, open communication and interaction between personnel, as well as the need for adjustments and innovations in work processes to cope with changing times (Butt et al., 2022). However, e-leadership in the educational environment has not been fully fulfilled. This is marked by the use of technology, including e-leadership, as a strategy to improve service quality and student satisfaction, which still needs to be considered (Sunarsi et al., 2020). Effective e-leadership is very important in an institution because it can optimize coordination, communication, and decision-making through technology, ultimately improving the quality of the institution's services (Sintiya et al., 2020). Using appropriate leadership approaches, norms will be formed that govern how leaders inspire creativity and innovation in their subordinates in carrying out their duties (Sunaengsih et al., 2023).

In addition, problems in realizing school effectiveness include a lack of a supportive mental attitude from education managers, a lack of follow-up from program evaluations, unsupportive leadership styles, and a lack of belonging from education implementers (Fransiska, 2020). Leaders in the higher education environment continue to use a leadership approach that follows current conditions (Sunaengsih et al., 2021). Productive management supports the effectiveness of university leadership by encouraging achievement and an adaptive culture (Sunaengsih et al., 2019). This also underscores the importance of effective university management in overcoming these obstacles.

Implementing e-leadership and effective management in higher education aims to improve leadership capabilities following the demands of the digital era and provide adequate information support for strategic and integrated management decisions (Raharjo et al., 2023; Tomchuk et al., 2020). The emergence of various existing problems is due to the lack of measurement of the quality of effective implementation of e-leadership and higher education management. This causes the existing problems to be fully met or specific. Therefore, measuring the quality of e-leadership implementation is necessary by paying attention to specific dimensions, namely, visionary, covener, team sponsor, manager, innovator, and mentor (Sunarsi et al., 2020). In addition to ineffective higher education management, it is also necessary to pay attention to several aspects, namely the implementation of strong educational leadership by higher education leaders, close partnerships between higher education leaders, parents, and the community, and the creation of a positive and conducive climate for the student learning process (Hamid, 2019).

On the other hand, this variable also emphasizes the importance of regular monitoring of student progress and student success in achieving relevant and appropriate skills. If universities can meet all the dimensions measured, it will impact the quality of education. The quality of implementation can be measured by comparing student and academic staff reception

(Sunaengsih, 2023). Therefore, it is important for universities to check the extent to which e-Leadership and effective university management are applied. Higher education's output includes academic achievement and must pay attention to integration with the world of work and the application of innovative solutions to social challenges.

1.2. Related Research

The development of an e-leadership model ineffective university management is very necessary to create an effective university and ultimately improve university services and the quality of higher education. The quality attributes of higher education, which include relevance, efficiency, effectiveness, accountability, creativity, M-M situation, appearance, empathy, responsiveness, productivity, and academic ability, can be used as a reference in improving quality so that the sustainability of the university can be maintained (Christianingsih, 2020). Meanwhile, evaluating the implementation of the academic environment strategy is very important to assess performance and overcome problems by systematically collecting data to ensure learning effectiveness and the achievement of national education goals (Al Fajri et al., 2022). Periodic measurements through student satisfaction surveys with academic services are important in assessing acceptance and improving the overall quality of higher education (Widiastuti et al., 2022). The importance of measuring quality elements is because they significantly impact overall quality; ignoring these measurements can result in serious negative consequences (Syukron, 2017).

Previous research identified the results that the e-leadership model has a theory of self-determination (e-competence, e-autonomy, and e-relatedness) (Aziz, Butt, & Noreen, 2021). The e-leadership model also connects knowledge, attitudes, behaviors, and practices with motivations, needs, skills, and competencies in a given context. In addition, other research also identified results that leaders in Higher Education and universities must have adequate technological knowledge, electronic skills, and e-leadership practices to provide a technology-enabled learning environment and demand more e-leadership models in the future (Yuting, Adams, & Lee, 2022). The findings of the study indicate that 1) work discipline has a positive impact on employee performance, 2) E-Leadership moderates the influence of management information systems on employee performance, 3) E-Leadership does not moderate the influence of digital culture on employee performance (Raharjo, 2023).

An analysis of the implementation of e-leadership and effective higher education management in the context of the use of information technology is very relevant to understanding its impact on coordination, communication, and decision-making in the higher education environment (Al Kadri et al., 2023). Hopefully, this analysis will provide in-depth insights into how universities can utilize technology to improve efficiency, service quality, and response to changing times (Christianingsih, 2020).

This research brings innovation with a direct approach to measure the dimensions of e-leadership and effective university management. Unlike previous studies that only looked at the model, this study focuses on key dimensions that provide a more comprehensive picture of the implementation of e-leadership and effective university management. The results of this analysis are expected to provide a deeper understanding and significantly impact the decision-making process in the higher education environment.

1.3. Research Objectives

This research is focused on finding effective e-leadership design in university management. This study aims to find out the general overview of e-leadership, effective university management, and e-leadership design in effective university management at the UPI, Sumedang Campus.

The contribution of this research is expected to be a reference for other research to identify e-leadership in higher education based on 6 main dimensions, including visionary, convener, team sponsor, manager, innovator, and mentor. Effective management in higher education contains 5 main dimensions, including the implementation of strong educational leadership by university leaders, the existence of partnerships between universities, parents, and the community, the existence of a positive and conducive climate for students to learn, student progress is often monitored, emphasizing the success of students in achieving appropriate

activity skills. This research will identify dimensions that have reached high-quality standards that need special attention to be improved in e-leadership and effective higher education management. This will allow leaders to make more specific and strategic decisions in improving the delivery of the education system, which in turn will impact improving the overall quality of higher education.

2. Theoretical Framework

2.1. Effective Higher Education Management

Higher education is an institution that provides continuing education and teaching in various forms, such as academies, polytechnics, high schools, institutes, and universities (Rabiah, 2019). In implementing higher education, effective university management with a good management system with high transparency and accountability is needed. Higher education management governance places public expectations and the Constitution, including social functions, intellectuals' homes, and role models. Higher education management includes knowledge management, academics, educational processes, and administration. In this case, university leaders play the role of academic leaders and institutional leaders. Higher education management management is based on the principles of good governance (Nanang et al., 2023).

The characteristics of an effective university are determined by the implementation of strong educational leadership by university leaders, the existence of partnership cooperation between universities, students, and the community, the existence of a positive and conducive climate for students to learn, continuous monitoring of student progress, and an emphasis on student success in achieving essential skills and activities (Hamid, 2019).

Higher education as a pioneer of change is a visionary university that can create and find innovative, quality, and responsive leadership strategies to global developments and local challenges and can read future trends (Sihite & Saleh, 2019). An effective university is a university that has a good management system with high transparency and accountability as well as optimal empowerment of university resources (internal and external) to realize the vision, mission, and goals of the university effectively and efficiently.

Higher education management is the process of implementing higher education by utilizing all resources as optimally as possible to achieve higher education goals effectively and efficiently. Effective university management requires direct support from the leadership to implement it with a sense of togetherness. Thus, achieving university goals is based on a spirit of togetherness and a high sense of belonging to the university. Higher education management is divided into 3 types (Nizam and Basaruddin, 2014), namely:

1. Functional Area Management

This includes academic program management and resource management, finance, lecturers and employees, facilities, and infrastructure.

2. Data/information management (including knowledge management system)

3. Quality Management (especially internal quality assurance system).

The quality of higher education is the conformity between the implementation of higher education and the SNP, as well as the standards set by the university itself based on the vision and needs of stakeholders (DIKTI in Christianingsih, 2020). Thus, there are higher quality standards: a. Determined by the government; b. Agreed upon in higher education (vision); c. Desired by stakeholders (Christianingsih, 2020). The quality of higher education management is very important in encouraging the creation of superior academic quality, so professional management is needed seriously and consistently. With the implementation of higher education management, it is hoped that higher education goals can be realized effectively and efficiently.

2.2. E-Leadership

A leader leads an organization, company, institution, or group (Sihite et al., 2019). In the organizational structure, the leader has a very important role. The leader plays the role of glue

and must be able to control the organization he leads. To be able to achieve organizational goals well, leaders must be able to move the wheels of the organization through their vision and mission as the direction and guidance for the running of an organization (Yuting, et al., 2022).

Leadership is the core of management as a driving force, a process to achieve goals and empower resources and tools in the organization to achieve goals (Darmawan, 2022). Leadership must be able to anticipate and follow changes that occur in the organization through its authority in building structures, people, technology, and mechanisms that can create a new culture that is more productive (Sihite & Saleh, 2019). Effective university leadership is the ability of university leaders to lead universities with a good management system and give a high influence to university residents to be able to move towards the achievement of the vision, mission, and goals of higher education with a sense of volunteerism and happiness (Raharjo, 2023).

E-leadership design is a leadership design or pattern that can utilize information technology to empower subordinates with strategic and applicable steps that are easy for all university residents to implement (Butt et al., 2022). The design of e-leadership will make it easier for university residents to understand the direction of university leaders by utilizing information technology. This means that university residents realize that the use of information technology in empowerment will be very helpful in achieving the vision, mission, and goals of higher education and enable solving problems faced by universities more quickly (Sintiya et al., 2021).

The e-leadership step is the stage of implementing the use of information technology carried out by university leaders in realizing the vision, mission, and goals of higher education and solving various university problems to be more effective and efficient (Nanang et al., 2023). With stages that are easy to understand and easy to implement, university leaders will easily realize the management and development of universities based on technology and information and direct university residents to achieve university goals happily and voluntarily because they are not limited by space and time (Nutrisari, et al., 2024).

E-leadership has several important roles to play. The role can be a dimension for e-leadership where each role reflects an important aspect of leadership and provides a comprehensive framework for evaluating and understanding e-leadership; the roles are as follows (Sunarsi et al., 2020):

1. Visionary

Able to understand and describe the organization's big vision to its members.

2. Convener

Able to manage differences between members and facilitate the organization in achieving clear goals and solving problems.

3. Team Sponsor

Able to form and lead both real and virtual work teams.

4. Manager

Able to source and distribute organizational resources wisely and manage real and virtual organizations effectively.

5. Innovator

Able to find new ways to carry out tasks outside of their primary responsibility.

6. Mentor

Able to guide and direct new leaders within the organization

3. Method

3.1. Research Design

In this study, a quantitative approach is applied using the survey method as a way to collect data. With this survey, it is hoped that researchers will be able to see the characteristics and activities of a population (community) more comprehensively (Pandey & Pandey, 2021). Based on the period of time, this study is classified as a Cross-Sectional Survey. Data collection in this type of survey is carried out only once throughout the research period (Abduh et al., 2022).

The use of surveys aims to obtain research data from several natural objects. Still, researchers are responsible for data collection by distributing questionnaires through Google Forms, conducting interviews, and using other methods (Sugiyono, 2022). The survey research process includes 6 steps, including selecting research variables, selection of survey methods, questionnaire design, data collection, measurement evaluation, and data analysis (Vomberg & Klarmann, 2021).

3.2. Respondent

Based on the purpose of the study, the population studied was Universitas Pendidikan Indonesia (UPI) Sumedang Campus students. The sample of this study consisted of 204 students who were randomly selected using a simple random sampling technique. This technique is the simplest and fairest sampling procedure, where each unit has an equal chance of being selected (Sumargo, 2020). The sample in this study includes 175 female students and 29 male students from various study programs, namely Elementary School Teacher Education, Physical Education for Elementary School Teachers, S1 Nursing, D3 Nursing, and Tourism Industry, which are in semesters 1, 3, 5, and 7. With the diversity of sample demographics, it is hoped that the answers given are more representative and can be used as initial findings to develop e-leadership designs.

3.3. Data Collection

Questionnaires are a data collection tool in this study. The questionnaire selected is a type of closed questionnaire with an assessment scale of 1 to 5. This questionnaire allows the sample to provide flexible and suitable answers to the field's real conditions and direct data collection from the participant's perspective (Stantcheva, 2023; Gumilang, 2021). The questionnaire consisted of 27 questions designed to measure the variable dimensions of e-leadership, namely visionary, convener, team sponsor, manager, innovator, and mentor. Meanwhile, effective higher education management variables include several important aspects, namely the implementation of strong educational leadership by higher education leaders, close partnerships between higher education leaders, parents, and the community, and the creation of a positive and conducive climate for the student learning process. In addition, this variable also emphasizes the importance of regular monitoring of student progress and student success in acquiring relevant and appropriate skills. All of these dimensions will be analyzed and made an integral part of the research results. Through this approach, the study's results are expected to provide a comprehensive overview of the quality of e-leadership and the effectiveness of higher education management at the UPI Sumedang Campus.

3.4. Data Analysis

The method used to analyze the data in this study is descriptive analysis. Through descriptive analysis, researchers can evaluate the suitability of the generalization of research results from a sample (Febriani, 2022; Loeb et al., 2017). The data presented in this descriptive analysis includes mean, standard deviation, and percentage, which helps researchers understand the various types of patterns contained in the results of the research that has been collected. The analysis of this data is processed through the SPSS 26.00 application.

After data analysis is carried out, the quantitative data obtained is then categorized using sequential ordinal scales. This method allows data grouping based on a specific level or order, thus providing a clear structure and a deeper understanding of the study results (Kemp & Grace, 2021). Thus, researchers can identify patterns and trends in the data more effectively and systematically, which ultimately reflect the variables measured. The ordinal scale of e-leadership and effective university management used in this study is listed in Table 1 as follows.

Table 1. Ordinal Scale of E-Leadership and Effective Higher Education Management

Score	Classification of E-Leadership and Effective Higher Education Management
0 – 1,00	Very low
1,01 – 2,00	Low
2,01 – 3,00	Enough

3,01 – 4,00	High
4,01 – 5,00	Very high

3.5. Validity and Reliability

The validity test was carried out to determine the level of accuracy of the questionnaire used as a research instrument (Sudaryono et al., 2019). As for the reliability test, it is carried out to see the consistency of each individual score of one instrument against the other (Moskal & Leydens, 2019). The validity and reliability tests in this study were carried out on respondents who had the same characteristics as the original respondents of the study. The number consists of 40 people with female and male genders aged 18 to 23 years and status as students at leading universities in West Java. The analysis of the validity and reliability test of the research instrument was carried out using Microsoft Excel. The validity and circumstance test results can be seen in Tables 2, 3, 4, and 5 as follows.

Table 2. E-leadership Validity Test Results

No	r_{hitung}	t_{hitung}	t_{tabel}	Description
1	0.598	3.950	1.701	VALID
2	0.520	3.226	1.701	VALID
3	0.614	4.117	1.701	VALID
4	0.448	2.651	1.701	VALID
5	0.619	4.171	1.701	VALID
6	0.098	0.521	1.701	INVALID
7	0.383	2.193	1.701	VALID
8	0.598	3.950	1.701	VALID
9	0.376	2.147	1.701	VALID
10	0.614	4.117	1.701	VALID
11	0.400	2.307	1.701	VALID
12	0.161	0.862	1.701	INVALID
13	0.624	4.229	1.701	VALID
14	0.596	3.928	1.701	VALID
15	0.464	2.769	1.701	VALID
16	0.624	4.229	1.701	VALID
17	0.114	0.607	1.701	INVALID
18	0.504	3.087	1.701	VALID

Table 2 above shows that 3 items of the statement are declared invalid, namely statement items number 6, 12, and 17. Then, the follow-up carried out by the researcher on the statement item that was declared invalid was by making revisions or improvements. So that the statement item can be reused as a research instrument.

Table 3. E-leadership Reliability Test Results

No	r_{hitung}	r_{11}	r_{tabel}	Description
1	0.598	0.749	0.37	RELIABLE
2	0.520	0.685	0.37	RELIABLE
3	0.614	0.761	0.37	RELIABLE
4	0.448	0.619	0.37	RELIABLE
5	0.619	0.765	0.37	RELIABLE
6	0.098	0.178	0.37	NOT RELIABLE
7	0.383	0.554	0.37	RELIABLE

No	r_{hitung}	r_{11}	r_{tabel}	Description
8	0.598	0.749	0.37	RELIABLE
9	0.376	0.546	0.37	RELIABLE
10	0.614	0.761	0.37	RELIABLE
11	0.400	0.571	0.37	RELIABLE
12	0.161	0.277	0.37	NOT RELIABLE
13	0.624	0.769	0.37	RELIABLE
14	0.596	0.747	0.37	RELIABLE
15	0.464	0.633	0.37	RELIABLE
16	0.624	0.769	0.37	RELIABLE
17	0.114	0.205	0.37	NOT RELIABLE
18	0.504	0.670	0.37	RELIABLE

Table 3 above shows that there are unreliable statement items, namely statement items 6, 12, and 17. Then, the researcher followed up on the statement items that were declared unreliable by making revisions or improvements. So that the statement item can be reused as a research instrument.

Table 4. Results of the Effective Higher Education Management Validity Test

No	r_{count}	t_{hitung}	t_{tabel}	Description
1	0.810	7.308	1.701	VALID
2	0.627	4.259	1.701	VALID
3	0.633	4.322	1.701	VALID
4	0.531	3.314	1.701	VALID
5	0.563	3.601	1.701	VALID
6	0.419	2.445	1.701	VALID
7	0.184	0.991	1.701	INVALID
8	0.803	7.134	1.701	VALID
9	0.446	2.637	1.701	VALID

Table 4 above shows that there is 1 statement item is declared invalid, namely statement item number 7. Then, the follow-up carried out by the researcher on the statement item that was declared invalid was by making revisions or improvements. So that the statement item can be reused as a research instrument.

Table 5. Results of the Effective Higher Education Management Reliable Test

No	r_{count}	r_{11}	r_{tabel}	Description
1	0.810	0.895	0.37	RELIABLE
2	0.627	0.771	0.37	RELIABLE
3	0.633	0.775	0.37	RELIABLE
4	0.531	0.694	0.37	RELIABLE
5	0.563	0.720	0.37	RELIABLE
6	0.419	0.591	0.37	RELIABLE
7	0.184	0.311	0.37	NOT RELIABLE
8	0.803	0.891	0.37	RELIABLE
9	0.446	0.617	0.37	RELIABLE

Table 5 above shows that there is even an unreliable statement item, namely statement item number 7. Then, the researcher followed up on the statement items that were declared

unreliable by making revisions or improvements. So that the statement item can be reused as a research instrument.

4. Findings

The following researcher describes the results that have been achieved in the research that has been carried out. The description below refers to the formulation of the problem that has been determined. The researcher's results are described in detail at the following points.

4.1. Overview of E-leadership of Higher Education at the UPI Sumedang Campus

E-leadership in this study consists of visionary indicators, conveners, sponsor teams, managers, innovators, and mentors. These indicators are then developed into question items related to e-leadership. All of these questions were then measured quantitatively and distributed to all respondents. The measurement of each indicator on e-leadership will show the extent to which e-leadership has been shown by the leaders in leading UPI Sumedang Campus. The following is the e-leadership implemented at UPI Sumedang Campus and presented in Table 6 below.

Table 6. Overview of Higher Education E-Leadership at the UPI Sumedang Campus

Dimensions	Items	N	Mean	Std. Deviation
Visionary	Have the ability to see the big picture of the campus in the future	204	3.89	.829
	Translating expectations for future campus progress to students	204	3.92	.839
Convener	Have the ability to get to know students	204	3.76	.895
	Managing students to bring the campus towards a purposeful destination	204	4.04	.853
Team Sponsor	Have the ability to manage and create relationships with students using digital/virtual tools	204	3.98	.868
Manager	Have the ability to manage and lead students with full responsibility in a tangible form	204	4.00	.797
	Have the ability to manage and lead students with full responsibility in virtual form	204	3.91	.804
Inovator	Have the ability to find new ways by leading using digital tools	204	3.93	.781
Mentor	Have the ability to guide students in the direction they are aiming through digital tools	204	3.96	.812
Valid N (Listwise)		204		

Based on Table 6, it was found that there was a positive assessment from students of the electronic leadership skills (e-leadership) possessed by campus leaders. The survey results showed that students highly assessed various aspects of the e-leadership dimension.

First, in the visionary dimension, students assessed that campus leaders could also see the big picture of the campus in the future, which was shown by an average assessment of 3.82. Furthermore, the indicator translates expectations for future campus progress to students, with an average assessment of 3.92. Thus, it was concluded that students saw that campus leaders fulfilled the visionary indicators of e-leadership.

Second, in the convener dimension, the survey results show that campus leaders effectively direct students towards targeted goals, with an average assessment of 4.04, which shows a very high level of satisfaction. In addition, their ability to get to know students is also considered quite good, with an average assessment of 3.76. This indicates that campus leaders have succeeded in fulfilling the convener aspect of e-leadership in the view of students.

Furthermore, in the dimension of the sponsorship team, students assessed that campus leaders could manage and create relationships with students through digital or virtual tools, with an average assessment of 3.98. This shows that campus leaders also fulfill the role of the e-leadership sponsorship team well.

In the dimension of managers, the survey results show that students consider campus leaders to be able to lead and manage them with real responsibilities, both real and virtual. The average rating for this ability is 4.00 and 3.91, respectively, indicating high satisfaction.

Furthermore, in the innovator dimension, students assessed that campus leaders could find new ways to lead using digital tools, with an average assessment of 3.93. This indicates that students also consider the aspect of e-leadership innovators to be well fulfilled.

Finally, in the mentor dimension, students assessed that campus leaders have the ability to guide them in the desired direction through digital tools, with an average rating of 3.96. From these results, the aspect of e-leadership mentors is also well fulfilled from the student's perspective. Thus, the survey results show that students generally give a positive assessment of the e-leadership ability of campus leaders in various dimensions that have been studied.

4.1.1. Overview of Average E-leadership at UPI Sumedang Campus

Based on the overview per dimension above, the following compares the general overview of e-leadership at UPI Sumedang Campus: Visionary, Convener, Team sponsor, Manager, Innovator, and Mentor.

The following Figure 1 is an overview of the comparison of each indicator of e-leadership that has been implemented at UPI Sumedang Campus:

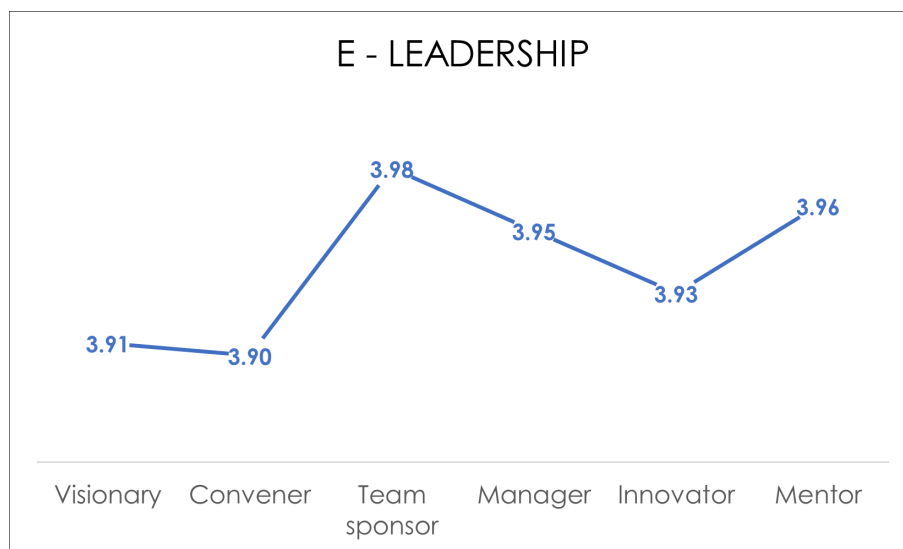


Figure 1. E-leadership Overview

Based on Figure 1, it was concluded that the first dimension, namely the sponsorship team, has an average of 3.98 with high criteria. The second statement is that mentors have an average of 3.96 with high criteria. The three dimensions of the manager have an average of 3.95 with high criteria. The four innovators have an average of 3.93 with high criteria. The five visionary dimensions have an average of 3.91 with high criteria. The last convener dimension has an average of 3.90 with high criteria. From the results of these calculations, it can be concluded that in the view of students, the dimension of the sponsorship team of campus leaders is the

highest dimension. In contrast, the convener dimension is the lowest dimension owned by the UPI Sumedang Campus campus leaders.

4.1.2. Percentage of E-leadership at UPI Sumedang Campus

Furthermore, this section describes the percentage of student responses to the e-leadership dimension. The following Figure 7 is an overview of the percentage of each dimension of e-leadership owned by the leadership of UPI Sumedang Campus.

Table 7. Percentage of E-leadership

E-Leadership Dimensions	Strongly Agree	Agree	Hesitate	Disagree	Strongly disagree
Visionary	26%	44%	26%	5%	0%
Convener	28%	40%	26%	5%	0%
Team Sponsor	32%	38%	25%	4%	0%
Manager	26%	48%	23%	4%	0%
Innovator	24%	49%	24%	3%	0%
Mentor	26%	48%	22%	4%	0%

Based on Table 7, the study results found that students generally agreed with the concept of e-leadership applied at the UPI, Sumedang Campus. In the Visionary dimension, 26% of students stated that they strongly agreed, and 44% agreed. In the convener dimension, 28% of students strongly agree, and 40% agree. Meanwhile, in the dimension of the sponsorship team, 32% of students stated that they strongly agreed, and 38% agreed. For the Manager dimension, 26% of students stated that they strongly agreed, and 48% stated that they agreed. In the Innovator dimension, 24% of students strongly agree, and 49% agree. Finally, in the Mentor dimension, 26% of students gave a perception that they strongly agreed and 48% agreed. This indicates that most students have a positive view of the role of e-leadership in various dimensions applied at the UPI.

4.2. Overview of Effective Higher Education Management at the UPI, Sumedang Campus

Higher education management in this study consists of indicators of the implementation of strong educational leadership by university leaders, the existence of partnerships between universities, parents, and the community, the existence of a positive and conducive climate for students to learn, student progress is often monitored and emphasizes the success of students in achieving appropriate activity skills. All of these indicators are then measured quantitatively and distributed to all respondents. The measurement of each indicator in the management of this university will show the extent to which UPI Sumedang Campus has implemented effective university management. The following is presented in Table 8, which provides an overview of effective higher education management at the UPI Sumedang Campus.

Table 8. Overview of Effective Higher Education Management at the UPI Sumedang Campus

Dimensions	Items	N	Mean	Std. Deviation
Implementation of strong educational leadership by university leaders	Easily contacted	204	3.75	1.012
	Be responsive to students	204	3.92	.930
	Implement learning-focused leadership	204	3.96	.830
	Keeping the student ratio ideal	204	3.89	.876
There is a partnership between universities, parents and the community	Positive communication with parents of students	204	3.51	1.015
	Maintaining networks and parental and community support	204	3.65	.937

	Attend important events in Higher Education	204	3.85	.935
The existence of a positive and conducive climate for students to learn	The neatness and cleanliness and comfort of the campus are well maintained	204	4.04	.911
	Campus amenities are well maintained	204	4.03	.912
	Giving awards to outstanding students	204	4.11	.872
	Strengthening student behavior	204	3.97	.893
	Execute duties and obligations quickly	204	3.99	.797
	Carrying out duties and obligations appropriately	204	4.05	.847
Student progress is often monitored	Providing students with the opportunity to participate on campus	204	4.22	.826
	Monitor the assessment of learning outcomes from various aspects	204	4.05	.838
Emphasis on student success in achieving appropriate activity skills	Doing the best to achieve satisfactory student learning outcomes	204	4.01	.821
	Showing commitment and supporting university programs to improve student skills	204	4.09	.826
	Supporting lecturers in teaching appropriate skills for students	204	4.08	.805
Valid N (Listwise)		204		

Based on Table 8, it can be concluded that UPI Sumedang Campus has successfully implemented various aspects of effective university management.

First, in terms of the implementation of educational leadership, the survey results show that actions such as focusing on learning with an average of 3.96, being responsive to students with an average of 3.92, maintaining the student ratio at an ideal level with an average of 3.89, and availability to be easily contacted with an average of 3.75 have been positively assessed by students. This is reflected in the high average rating for each related statement.

Second, partnerships between universities, parents, and the community have proven effective. Attendance at important events with an average of 3.85, support for parents and the community with an average of 3.65, and positive communication with parents of students with an average of 3.51 are indicators of success in building strong relationships between all parties involved.

Third, efforts to create a conducive and positive campus environment have also received high evaluations. Appreciation for student achievement with an average of 4.11, regularity with an average of 4.05, cleanliness with an average of 4.04, and campus comfort with an average of 4.03, as well as reinforcement of student behavior with an average of 3.97 are clear evidence of a supportive learning climate at UPI Sumedang Campus.

Fourth, in terms of student development, policies such as providing opportunities for participation with an average of 4.22, monitoring learning outcomes with an average of 4.05,

supporting skills improvement programs, and emphasizing academic success have also been successfully implemented.

Thus, the overall survey results confirm that UPI Sumedang Campus has successfully implemented various effective university management strategies to support its students' academic and social development.

4.2.1. Overview of the Average Effective Higher Education Management at UPI Sumedang Campus

Based on the overview per dimension above, the following is a comparison of the overview of effective university management at UPI Sumedang Campus, which consists of:

1. Implementation of strong educational leadership by university leaders
2. There is a partnership between universities, parents, and the community
3. The existence of a positive and conducive climate for students to learn
4. Student progress is often monitored
5. Emphasis on student success in achieving appropriate activity skills

The following Figure 2 is an overview of the comparison of each indicator of effective university management that has been implemented at UPI Sumedang Campus.

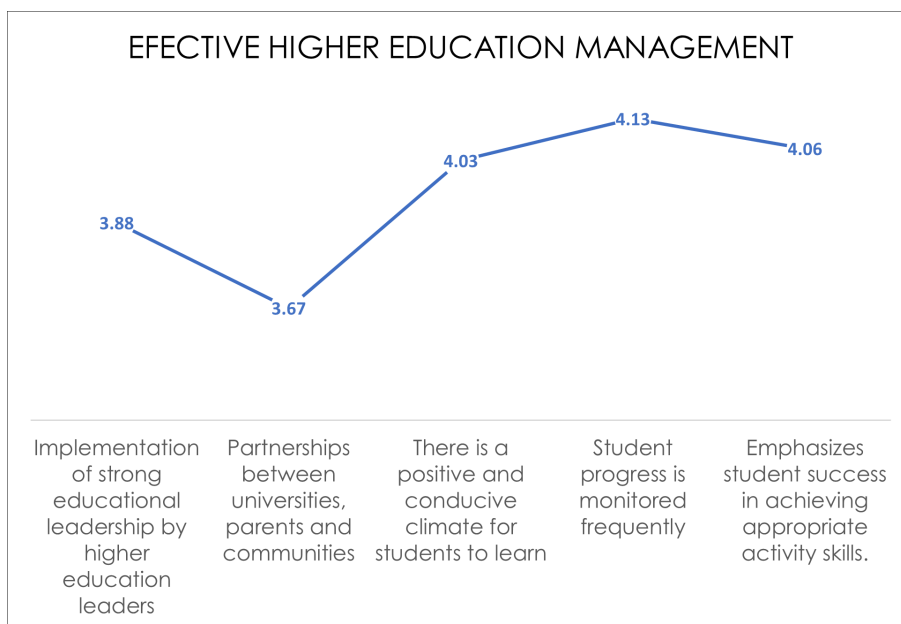


Figure 2. An Overview of Effective Higher Education Management

Based on Figure 2, it is concluded that the first dimension, student progress, is often monitored, with an average of 4.13 and very effective criteria. The second dimension emphasizes students' success in achieving appropriate activity skills to have an average of 4.06 with very effective criteria. The third dimension of a positive and conducive climate for students to learn averages 4.03 with very effective criteria. The four dimensions of the implementation of strong educational leadership by university leaders have an average of 3.88 with effective criteria. The five dimensions of partnerships between universities, parents, and the community have an average of 3.67 with effective criteria. From the results of these calculations, it can be concluded that in the view of students, the dimension of student progress is often monitored to be the highest dimension owned. In contrast, the partnership dimension between universities, parents, and the community is the lowest dimension owned by university management at UPI Sumedang Campus.

4.2.2. Percentage of Higher Education Management at UPI Sumedang Campus

Furthermore, Table 9 describes the percentage of student responses to the university management dimension at UPI Sumedang Campus. Table 9 below is an overview of the

percentage of each dimension of higher education management that has been implemented at UPI Sumedang Campus.

Table 9. Percentage of Effective Higher Education Management

Dimensions of Effective Higher Education Management	Strongly Agree	Agree	Hesitate	Disagree	Strongly disagree
Implementation of strong educational leadership by university leaders	29%	39%	25%	7%	0%
There is a partnership between universities, parents and the community	27%	38%	28%	7%	1%
The existence of a positive and conducive climate for students to learn	24%	36%	31%	7%	1%
Student progress is often monitored	24%	34%	32%	8%	1%
Emphasis on student success in achieving appropriate activity skills	27%	33%	31%	8%	1%

Based on Table 9, students tend to agree with effective university management. In the dimension of implementing strong educational leadership by university leaders, 29% of students strongly agree, and 39% agree that strong leadership is very important for the institution's progress. In addition, 27% of students strongly agree, and 38% agree that partnerships between universities, parents, and the community can support academic success and student development. Regarding a positive and conducive climate for students, 24% strongly agree, and 36% agree that a supportive environment is very important to improve learning effectiveness. For the dimension of student progress is often monitored, 24% of students strongly agree, and 34% agree that regular academic progress monitoring is necessary to ensure that students are on the right path to success. Finally, in emphasizing students' success in achieving appropriate activity skills, 27% of students strongly agree, and 33% agree that it is important to focus on developing skills relevant to the needs of the world of work and life. This shows that most students have a positive view of various aspects of effective university management.

4.3. Design of E-Leadership in Effective Higher Education Management at the UPI

This section describes an overview of respondents' answers to research variables based on two indicators: E-leadership and Effective Higher Education Management. Figure 3 is an overview of respondents' answers to the indicators that are the variables of e-leadership research in effective higher education management at the UPI, Sumedang Campus.

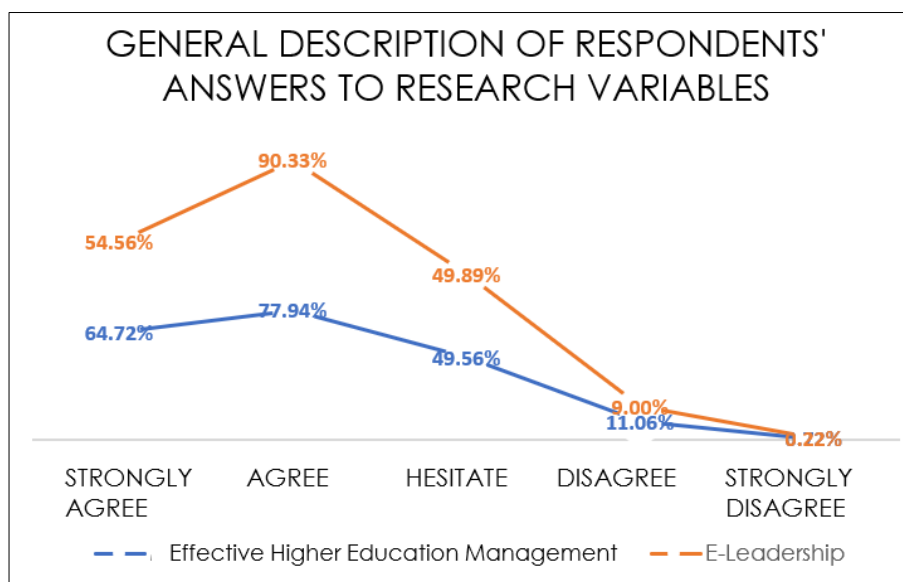


Figure 3. Overview of Respondents' Answers to Research Variables

Figure 3 concluded that the general overview of respondents' answers to the e-leadership research variable was 90.33% agree, 54.56% strongly agree, 49.89% hesitated, 9.00% strongly disagreed, and 0.22% strongly disagreed. From these results, it is clear that respondents think

that most UPI Sumedang Campus leaders have a high e-leadership attitude. Meanwhile, the general overview of respondents' answers to effective university management research variables was 77.94% agree, 64.72% strongly agree, 49.56% hesitate, 11.06% disagree, and 0.72% strongly disagree. From these results, it is clear that respondents think that most of the university management at UPI Sumedang Campus has been implemented effectively.

In Figure 4, an overview of the comparison of student perceptions towards effective university management and e-leadership at the UPI, Sumedang Campus is presented.

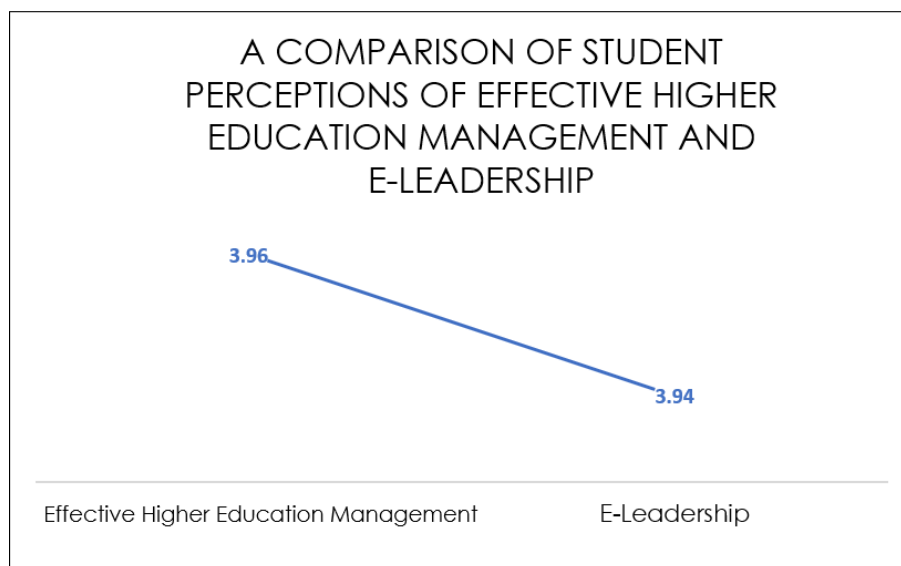


Figure 4. Comparative Overview of Student Perception of Effective Higher Education Management and E-leadership

Based on Figure 4, it was concluded that students' perception of effective university management had an average of 3.96 and was in the effective category. Meanwhile, student perception of e-leadership at UPI Sumedang Campus averages 3.94 and is in the high category. The survey results show that, in general, students perceive that higher education management at UPI Sumedang Campus has been implemented effectively and the leadership of UPI Sumedang Campus has a high e-leadership attitude.

5. Discussion

5.1. Overview of Higher Education E-leadership at the UPI Sumedang Campus

E-leadership is the ability of a leader to empower his subordinates by utilizing information technology so that the vision, mission, and goals achieved by universities are more effective and efficient. Leadership/e-leadership is the core of management, namely as a driving force, a process to achieve goals and empower resources and tools in the organization to achieve goals (Darmawan, 2022). Based on the results of the study, the general overview of e-leadership shows that the leaders of UPI Sumedang Campus have mostly met the e-leadership indicators, which include visionary, convener, team sponsor, manager, innovator, and mentor with a high e-leadership attitude. This indicates that the leadership of UPI Sumedang Campus has been able to utilize information technology to empower its subordinates, resources, and tools involved in realizing the university's vision, mission, and goals. Without e-leadership, effective leadership in an institution is impossible to achieve (Nutrisari et al., 2024). Implementing effective strategies in higher education can improve the quality of education, student learning experience, academic achievement, institutional image, stakeholder engagement, and overall institutional well-being and financial stability (Degtjarjova et al., 2018). However, the study results show a contradiction where students' perception of e-leadership in the innovator dimension has a small percentage of the perception of strongly agreeing compared to other dimensions. To achieve superior academic results, universities should implement effective strategies in all aspects. Higher education should adapt its approach to the targeted environment because each segment of society has different preferences and perceptions

regarding higher education that affect their response to innovative educational products offered (Sihite & Saleh, 2019).

5.2. Overview of Effective Higher Education Management at the UPI, Sumedang Campus

The quality of higher education is the management of higher education institutions in such a way that they can produce higher education services that follow customers' needs (Christianingsih, 2020). Effective university management is university management that is carried out with a sense of community, which is characterized by the direct support of leaders to employees and vice versa. Based on the results of the research, the overview of effective university management shows that the university management implemented at UPI Sumedang Campus has mostly met the indicators of the implementation of strong educational leadership by university leaders, the existence of partnerships between universities, parents, and the community, the existence of a positive and conducive climate for students to learn, student progress is often monitored, and emphasizes the success of students in achieving appropriate activity skills. So, the leadership of UPI Sumedang Campus has carried out university management by directly supporting the activities carried out by students effectively. A university's quality reflects its overall quality, including all elements of management (Syukron, 2017). However, the study results show a contradiction where students' perception of effective university management in the dimension of having a positive and conducive climate for students to learn and student progress is often monitored, getting a small percentage of very agreeable perception compared to other dimensions. Higher education must consistently integrate various elements to carry out effective education quality management under its responsibilities and roles in the world of education (Rabiah, 2019).

5.3. Design of E-Leadership in Effective Higher Education Management at the UPI

Effective university leadership is the ability of university leaders to lead universities with a good management system and influence university residents to move towards achieving the vision, mission, and goals of the university with a feeling of volunteerism and joy. The success of university management is determined by its leadership qualities. Leadership must be based on hopes, aspirations, and innovations that strive to solve environmental problems (Sihite & Saleh, 2019). The study results show that, in general, university management at UPI Sumedang Campus has been implemented effectively, and the leadership of UPI Sumedang Campus has a high e-leadership attitude. The effective implementation of e-leadership and university management indicates the existence of quality leadership and management (Karim et al., 2024; Raharjo, 2023). This application will be maximum and of appropriate quality if university leaders can carry out their e-leadership roles well by covering the dimensions of visionary, convener, team sponsors, managers, innovators, and mentors (Sunarsi et al., 2020). In addition, the quality of higher education will be maximized if it can implement strong educational leadership, build solid partnerships between universities, parents, and the community, and create a positive and conducive learning climate for students. A higher level of e-leadership correlates with an improvement in the quality of educational institutions (Ayub et al., 2023). The maximum implementation of e-leadership can influence work engagement levels, individual welfare in higher education, and organizational behavior, especially in improving learning practices in higher education (George & Wooden, 2023).

There is a positive relationship between the effective level of higher education management and various positive impacts, including effective strategic planning and transformative technology integration (Karim et al., 2024). However, in the general perception of e-leadership and effective university management, it is necessary to identify specific factors that cause differences in perceptions so that each party can have a uniform view of e-leadership and effective university management.

6. Conclusion

Based on the research results, it can be concluded that the leadership of UPI Sumedang Campus has a high e-leadership attitude by meeting the e-leadership indicators, which include visionary, convener, team sponsor, manager, innovator, and mentor to the maximum.

However, it is necessary to strengthen the convener indicator so that leaders and students have a better relationship in bringing the campus towards the desired goal. Other research results show that higher education management at UPI Sumedang Campus has been implemented effectively by meeting the indicators of the implementation of strong educational leadership by university leaders, the existence of partnerships between universities, parents, and the community, the existence of a positive and conducive climate for students to learn, student progress is often monitored, and emphasis is placed on the success of students in achieving appropriate activity skills. However, it is necessary to improve the partnership between universities, parents, and the community as parties involved in implementing effective university management. The Design of E-Leadership in Effective Higher Education Management shows that higher education management at UPI Sumedang Campus has been implemented effectively, and the leadership of UPI Sumedang Campus has had a high e-leadership attitude.

Limitations

The limitations of this study include a limited reach only at the UPI Sumedang Campus with student respondents. Additional perspectives from university teaching staff are needed for comparative data and joint analysis of student responses. This research is also limited to descriptive survey and analysis methods that only provide an overview of effective e-leadership and university management without conducting an in-depth exploration of the factors that affect the research topic.

Recommendations

Based on the results of the research on the development of an effective e-leadership model in higher education management, it was found that, in general, the university management applied at UPI Sumedang Campus has been running effectively, and the leadership of UPI Sumedang Campus has a high e-leadership attitude in carrying out its responsibilities. However, several indicators in each dimension still need to be evaluated. The overall dimension that continues to experience improvement and refinement in each indicator will slowly influence the development of the e-leadership model in realizing effective university management. University leaders will certainly need the design and steps of e-leadership in implementing e-leadership itself, which will ultimately lead to the development of an e-leadership model that is under the characteristics of universities. In addition, it is recommended that follow-up research be conducted using various research methods and involve more diverse respondents. It is also important to conduct comparative research between different universities and conduct a more in-depth analysis of the factors that affect the implementation of e-leadership and effective university management.

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Conflict of interest

The Author(s) declare(s) that there is no conflict of interest.

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